

Howell v. City of Zion, et al.
Case No.: 16 CV 3949

EXHIBIT A



RONALD R. SCOTT, M.A., M.S.
Shooting Reconstruction, Forensic
Firearms & Ballistics
37881 N. 10th Street
Phoenix, Arizona 85086

623.764.6371

www.azballistics.com
www.shootingreconstruction.org

Email: ronaldscott@azballistics.com

***Firearms ▪ Ballistics ▪ Police Shootings ▪ Shooting Reconstruction & Investigations
Toolmarks & Comparison Microscopy ▪ Dynamics of Shooting Incidents ▪ Crime Scenes ▪ Gunshot
Distance ▪ Daubert Consultation ▪ Gunshot Wounds ▪ Hunting & Firearms Safety ▪ Trajectory Analysis***

March 13, 2017

Re: Justus Howell fatal shooting

The following constitutes my report in the above case.

1. Engagement and Compensation

I have been engaged in this case is to examine certain aspects concerning the fatal shooting of Justus Howell by Officer Eric Hill of the Zion Police Department (Illinois), which occurred on April 4, 2015 at approximately 1355 hours (1:55 PM). The scope of my examination is related to firearms, ballistics, shooting reconstruction, shooting incident dynamics, crime scene issues and any related factors. My compensation for this engagement is \$395 per hour.

2. Qualifications

My curriculum vitae is attached as Exhibit 1.

I am a 25-year plus retired Commissioned Officer of the Massachusetts State Police with over half my career in the MSP Ballistics Section and was the Commanding Officer of the main and sub-labs with 7 forensic examiners; I conducted, supervised, and trained personnel in forensic investigations, shooting reconstruction, and the dynamics involved in shooting incidences. I have also conducted criminal investigations related to shooting incidences and other crimes. The lab

provided crime scene investigation and forensic examination services to 350 cities and towns, all State agencies, Federal agencies except the FBI, and the military services in Massachusetts.

I was appointed a member of the MSP Firearms Review Board which evaluated departmental officer involved shooting incidences. As a member of the Staff Inspections Unit, I conducted agency shooting investigations, claims of excessive force and/or police misconduct, and violations of Policy & Procedure and Rules & Regulations. During 1987-88 I conducted evaluation testing of multiple models and makes for semi-automatic firearms using methodology similar to that employed by the military weapons testing.

I have investigated over 400 police involved shootings including incidents of fatal and non-fatal shootings, friendly fire injuries and deaths, involuntary or unintentional discharges, appropriate and inappropriate use of deadly force with firearms, less-than-lethal and non-lethal ammunition shootings, conducted electrical weapons, firearms of single shot, semi-automatic, and full automatic design; this includes revolvers, pistols, rifles, machine guns, grenade launchers, shotguns.

I have personally conducted thousands of forensic investigations, including crime scenes, attended approximately 700 post-mortems, and was trained in the forensic interpretation of gunshot wounds from a shooting reconstruction perspective (particularly, with respect to the relative positions of the shooter and the victim) by Chief Medical Examiner of Suffolk County, Dr. George Katsas and Dr. Albert Shub of Essex County. I have also attended numerous gunshot wound presentations and read the treatises on gunshot wound evidence authored by prominent forensic pathologists to include:

- Gunshot Wounds – Practical Aspects of Firearms, Ballistics, and Forensic Techniques by Dr. Vincent J. M. DiMaio.
- Dr. Michael Baden, former Chief Medical Examiner of New York City.
- Terminal Ballistics – A Text and Atlas of Gunshot Wounds by Dr. Malcolm J. Dodd.
- Effects of Small Arms on the Human Body by Dr. Martin Fackler.
- What's Wrong with the Wound Ballistics Literature and Why by Dr. Martin Fackler.
- Medicolegal Investigation of Death: Guidelines for the Application of Pathology to Crime Investigation by Drs. Ernest Spitz and Russell Fisher.
- Presentations, lectures, and actual casework with Dr. Michael Baden.
- Weapon Location Following Suicidal Gunshot Wounds by Drs. Jan Garavaglia and Billy Talkington.
- Shooting Incident Reconstruction by Lucien Haag and Michael Haag.
- Practical Analysis and Reconstruction of Shooting Incidents by Edward E. Hueske.
- Numerous other periodical articles published in the Journal of the Association of Firearms and Toolmarks Examiners; The Journal of Forensic Science of the American Academy of Forensic Sciences, Journal of the International Association for Identification, etc.

In addition, I have trained on or studied treatises published by other prominent forensic pathologists since 1979 in gunshot wounds and terminal ballistics. I have personally observed fatal and non-fatal gunshot wounds as they have occurred in my presence. I have attended the Bureau of Alcohol, Tobacco, Firearms National Firearms Academy Investigation course, FBI courses, state law enforcement courses, medico-legal death seminars, thousands of hours of in-service training at the State Police Academy, numerous crime scene shooting reconstruction courses, forensic seminars, etc.

In the aggregate, I estimate having been personally involved in about 5000 shooting investigation cases dating back to 1973. Of that total approximately 1000 were fatal shootings with the remainder consisting of non-fatal, property damage, bank and armored car robberies, domestic violence, malicious destruction, inadvertent and unintentional discharges, hunting and firing range incidents, self-inflicted wounds, drive-by shootings, self-defense, negligent and unsafe firearms safety discharges, military and combat injuries from gunshots, organized crime, terrorist activities, friendly fire, spontaneous disassembly and catastrophic firearms and ammunition failures, homemade and prison made firearms and silencers, international assassination attempts resulting in gunshot injury, shooting incidents in international waters, etc.

During my experience and training I have utilized and analyzed several hundred video and audio recordings of shooting incidents to reach scientific conclusions, including the existence and use of a firearm, the rate of fire, muzzle flash, type of firearm in the video, time, speed, and motion over distance using slow-motion and frame-by-frame sequencing. These video and audio recordings have included private monitoring systems, surveillance systems, police observation units, police in-car dash camera video, on-body camera and audio devices, Go-Pro camera digital video, civilian recordings on cellphones and digital cameras, and video and/or audio recording evidence provided by the news media or other sources.

As an expert witness I have testified over 300 times in the areas of firearms, ballistics, shooting reconstruction, and shooting dynamics at all levels of the court system including Federal Court and Military Hearings. A list of all cases in which I have testified by deposition or at trial as an expert in the last four years is attached as Exhibit 2. Testimony also has been given before the Massachusetts Legislature and consultation provided to Massachusetts Congressmen to assist with legislative issues.

My U.S. Army active duty career was within the Ordnance Corps and included extensive training and assignment in the testing, evaluation, repair and research of small arms and training in Explosive Ordnance Reconnaissance. I attended the U.S. Army Ordnance School at Ft. Dix and Small Arms Repair School, at Aberdeen Proving Ground, MD and spent most of my military career researching and testing Eastern Bloc weapons systems during the mid-1960's while assigned to an Ordnance Company in Germany where I was the Company Armorer and Crew Chief of the Headquarters Weapons Platoon responsible for the training and operating of .45 Auto Model 1911 Pistols, M14 Rifles, M14A1 Full Automatic Rifles, Browning M2 HB crew served machine gun, M79 Grenade Launcher, AR-15 Assault Rifles, M16 Full Auto Assault Machine Rifles, M72 LAW Rocket, M20 Super Bazooka, and various types of explosive ordnance (grenades, claymore mines, etc).

I have trained with the MSP Special Tactical Operations (STOP) team, been involved in shooting incident reconstruction from airborne platforms including police and military helicopters, and with the 10th Special Forces Group at Fort Devens, MA for purposes of familiarization with special weapons and tactics.

My weapons proficiency includes significant professional competition championships including World International Handgun Metallic Silhouette Championship 1980 winner, being the first Massachusetts State Police Officer to fire a perfect combat course score with a revolver; I hold a proficiency rating of Master Shooter and was a firearms instructor for several decades, and have had both a Federal and State Firearms License for full automatic firearms; I am currently a Federally Licensed Firearms Dealer and have taught Firearms and Hunter Safety Courses.

In 2002 I became an independent forensic consultant and provide services including firearms, ballistics, shooting reconstruction, ballistic testing, gyroscopic stability; internal, external, and terminal ballistics; reaction time, analysis of time and motion in a shooting incident, trajectory and drag model analysis and other specialized services. I have been retained by the U.S. Military, engineers, insurance companies, attorneys, prosecutors, authors, architects, Innocence Projects, and conducted work for both plaintiffs and defendants in civil litigation matters. Since 2002 I have been involved in over 500 investigations requiring shooting reconstruction and/or forensic investigation in approximately 48 of the U.S. states, and in Haiti, Virgin Islands, United Kingdom, Israel, Afghanistan, Iraq, Canada, Nigeria, the Philippines, Colombia, and Pakistan.

My forensic training, education, and experience are over 35 years, and my overall experience with firearms, ballistics, etc., exceeds 53 years. I have testified on numerous occasions regarding discharged cartridge case ejection and received advanced training and have personally conducted hundreds of generally accepted tests for determining discharged cartridge case ejection patterns, including actual testing of semi-automatic pistols, full automatic pistols, and machine guns and submachine guns, as well as studied literature on ejection pattern testing protocols published in the Journal of the Association of Firearms and Tool Mark Examiners, the Journal of Forensic Science published by the American Academy of Forensic Sciences, the FBI Bulletin, during factory Armorer Courses, Investigative Science Journal, and numerous books on shooting reconstruction including those by Dr. Vincent J. M. DiMaio, Edward Hueske and Lucien Haag, the Indiana Professional Engineer Magazine, blood splatter analysis, gunshot distance, wound ballistics, angles of gunshot impact, and the elements of time, motion, and distance in shooting incidents including reaction time for various shooting motions, rate of fire, holster retention levels, gunshots occurring during struggle over a firearm, and other issues.

My experience with Sig-Sauer firearms includes the following: In 1987-1988, in conjunction with the Armorer of the Massachusetts State Police, extensive field and firing range testing was conducted to evaluate the performance of several semi-automatic pistols to replace the revolvers that were in service by the department; one of these pistols was the Sig-Sauer Model 226 in caliber 9mm Luger. During the testing conducted by myself and the State Police Armorer, several thousand firings were conducted with each pistol being evaluated. The end result was that the Sig-Sauer was selected and I personally carried this model as a duty weapon for approximately 10 years before my retirement which included semi-annual qualification and in-service training. In addition, I am extensively experienced with numerous other Sig-Sauer semi-automatic pistols in various calibers as a result of conducting forensic examinations of firearms produced by the Sig-Sauer Company. I am also a certified law enforcement armorer having completed the Sig-Sauer Law Enforcement Armorer's Course held in W. Hartford, CT; this was attended with the same State Police Armorer with whom I conducted the evaluation testing of Sig-Sauer Pistols in 1987-88. I have also had several opportunities to visit the Sig-Sauer factory in New Hampshire where I have become proficient in the overall manufacturing process, assembly, and quality control protocols utilized. At the present time I own and regularly shoot a Sig-Sauer Model P228 Semi-automatic Pistol in 9mm Luger caliber, and own several other semi-automatic pistols. My overall experience and expertise with the design, operation, function, maintenance, and repair of Sig-Sauer Pistols is approximately 30 years.

I voluntarily submit to proficiency testing with the Collaborative Testing Service and I am one of 20 members of the American Academy of Sciences Accreditation Standards Board which is developing standards required by the Congressional Forensic Science Act in the area of firearms and related fields.

I have presented peer-reviewed scientific forensic presentations at numerous colleges and universities, seminars for District Attorneys and private attorneys, emergency medical service responders, police academies, private investigator meetings, and at annual meetings of several professional organizations of which I am a member or former member.

3. Shooting Reconstruction

In one of the most widely used treatises on shooting incident investigation, authors Lucien and Michael Haag (Shooting Incident Reconstruction, Second Edition, 2011 published by Elsevier) explain the concept of reconstruction and its general acceptance as part of forensic science by quoting from the text on criminalistics by noted forensic science experts Peter DeForest, Robert Gaensslen and Dr. Henry Lee in their treatise titled Forensic Science: An Introduction to Criminalistics (McGraw-Hill, 1983):

p. 29: “Physical evidence analysis is concerned with identification of traces of evidence, reconstruction of events from the physical evidence record, and establishing a common origin of samples of evidence.”

p. 45: “Reconstruction can assist in deciding what actually took place in a case and in limiting the different possibilities. Eyewitnesses to events are notoriously unreliable. People have trouble accurately remembering what they saw, particularly if a complex series of events takes place suddenly and unexpectedly. Reconstruction may provide the only ‘independent witness’ to the events and thus allow different eyewitness accounts to be evaluated for accuracy.”

p. 294: “Crime-scene reconstruction techniques are employed to learn what actually took place in a crime. Knowledge of what took place and how or when it happened can be more important than proving that an individual was at a scene. A skilled reconstruction can be successful in sorting out the different versions of events and helping to support or refute them.”

Consequently, shooting reconstruction involves using generally accepted specialized methods of analysis to reach valid and reliable conclusions. This can include using research studies and data from peer-reviewed published treatises in specific topic areas as a foundation for expressing conclusions based physical evidence; in some situations the lack of evidence which should be present, or expected to be in a general or specific location, can also provide the basis for opinions using these methods.

4. Source Materials

- A. Autopsy photos.
- B. Numerous crime scene photos including Totten’s Initial Photos of Scene, Lake County Major Crime Task Force photos of scene, photos of Officer Hill.
- C. Video of the shooting and shooting scene to include the original video from the municipal garage and an enhanced/magnified version of the shooting produced to plaintiff by the defendants.
- D. Video still captures of the municipal garage surveillance video consisting of each individual video frame starting with Frame 231 and ending with Frame 285; all being printed color images.
- E. Coroner’s Report including Case Narrative, Supplemental Narrative, and the Autopsy Report of Dr. Manuel Montez, and a Review Report by Dr. Thomas A. Rudd.

- F. Autopsy Diagrams of the Gunshot wounds.
- G. Deposition of Officer Michael Gildea.
- H. Deposition and exhibits of Officer Eric Hill.
- I. Deposition of Dr. Thomas Rudd.
- J. Reports of Measurements by the Lake County Major Crime Task Force.
- K. Interview of Officer Eric Hill.
- L. Interview of Officer Michael Gildea.
- M. Interview of Officer David Gort.
- N. Interview of Officer Kenneth Totten.
- O. Interview of Officer Tim Bartlett.
- P. Personal inspection of the shooting scene at Galilee Ave. to include taking measurements, observing the location of the municipal garage where the camera was located, the area consisting of Spaeth's Woodworking, driveway, sidewalk, white residence and front yard area where Justus Howell was shot and eventually collapsed.
- Q. Research and data on the .45 ACP Caliber Sig-Sauer Model 1911 TacOps Semi-Automatic Pistol manufactured by Sig Arms Company.
- R. Deposition of Officer David Gort.

5. Officer Hill's Assertion that He Shot Justus Howell because Howell Turned and Pointed a Gun at Him.

A. Officer Hill's Interview and Deposition Testimony.

Officer Eric Hill was interviewed by the Lake County Major Crime Task Force on April 8, 2015 at the Zion Police Department, after the fatal shooting of Justus Howell which occurred on April 4, 2015. The interviewing officers were Investigators D. Thomas and P. Grace. Officer Hill also testified at a deposition on September 29, 2016.

Certain pertinent excerpts related to the shooting are as follows:

(Interview p 2)

"Ofc. Hill said the armed subject turned to look at him at least two (2) times. Ofc. Hill said at one point the armed subject turned to his left with the gun still in his right hand. Ofc. Hill said when the subject turned his body he could see the subject's gun. Ofc. Hill said he was in fear for his life as he believed the subject was turning to shoot him as he continued to run south simultaneously. **Ofc. Hill said he fired two rounds in rapid succession at the armed subject aiming at the torso. Ofc. Hill said when he fired his first round the subject was looking at him with his left side presented toward Ofc. Hill** *(emphasis added)*."

(Deposition pp 193-194)

12 Q. Okay. Now, you told the investigators and
13 confirmed in your interrogatory answer that when
14 you fired the gun -- when you fired, excuse me, you
15 fired your shots at Mr. Howell, Mr. Howell had
16 turned to look at you and had presented his left
17 side to you. Is that correct?

18 A. Yes.

19 Q. Okay. And -- and that he had a gun in his
20 right hand?
21 A. Yes.
22 Q. And that when he presented his left side,
23 you could -- where you were, you could see the
24 weapon?

Note: Officer Hill demonstrates the turn made by Justus Howell which is marked as Exhibit 21 with a timestamp of " Sep 29 2016 14:37:12"overlaid. This is a still image from the deposition video recording which depicts Officer Hill turned to his left, bent over at the waist slightly with his right forearm parallel to the floor, his upper right arm extended across his upper body, and his right hand exhibiting the grip associated with holding a firearm; his left arm is alongside his left side, bent slightly at the elbow. Officer Hill will provide information in another part of the deposition where he describes that Justus Howell was angled left toward him because Officer Hill was moving south along the front of Spaeths' while Justus Howell was running at an angle across the driveway and toward the grass in the front yard of the white house which is south of Spaeth's Woodworking building.

22 Q. So you're a little -- you're a little left
23 of him?
24 A. I am.

(Deposition pp 187-188)

Officer Hill describes when Justus Howell allegedly turned toward him.

23 Q. Well, you can go ahead and tell me.
24 A. As he gets to here, you're going to see him
make a distinct motion, where he's going to dip his

2 right -- his right arm down. The gun is going to
3 come around. He's going to turn back to his left
4 and look at me like this.
5 Q. And that's when you shot him?
6 A. Yes.
7 Q. Okay.
8 A. Shortly within -- in that moment afterwards,
9 yes.
10 Q. Understood. So prior to that -- and we'll
11 come to that in a moment -- there were two other
12 occasions he turned, correct?
13 A. Yes.
14 Q. And on the two other occasions he turned, he
15 didn't turn and point a gun at you, did he?
16 A. No.
17 Q. He kind of turned, kind of looked to see
18 where you were?
19 A. Yes.
20 Q. Because you were chasing him, right?

21 A. Yes.

(Deposition p 198)

19 Q. Now, when you fired your weapon, Mr. Howell
20 had the weapon -- you say he had the weapon in his
21 hand, but he had turned the weapon all the way
22 around so you could see the weapon, is that
23 correct?

24 A. Correct.

(Deposition pp 199-200)

1 Q. So the weapon was beyond his body?

2 A. It was closer to his body than beyond.

3 Q. Well, but if he's turned --

4 A. It was passed his body, yes.

5 Q. If he's turned to the left, you can't -- if

6 he has the weapon behind his body, you cannot see
7 it, can you?

8 A. That is not where it was.

9 Q. No, no. I'm saying you couldn't see it if
10 he kept it along the side of his body.

11 A. Correct.

12 Q. So he had to extend the arm out, correct?

13 A. Correct.

14 Q. Okay. So the weapon was out beyond his
15 body?

16 A. Yes.

17 Q. All right. And could you recall -- and I
18 know it happened fast -- how far out the weapon
19 was?

20 A. Within arm's reach.

21 Q. Okay. And which direction was the -- was
22 the weapon turned and pointed towards you?

23 A. Pointed back at me.

24 Q. Pointed -- so not only did he have the right

1 arm out passed the body, he had the arm -- at least
2 his hand turned towards you or was the arm turned
3 towards you as well?

4 A. The hand.

5 Q. Just the hand.

6 So I'll get my directions straight here, if
7 I can. Would you say his arm was pointing to the
8 east?

9 A. To the east and --

10 Q. Or northeast?

11 A. To the east and north, northeast.

12 Q. So his hand -- his arm was extended out from

13 the body --

14 A. Yes.

15 Q. -- in an east or northeast direction?

16 A. Yes.

17 Q. Okay. And he has the weapon in his right

18 hand?

19 A. Yes, he does.

20 Q. But the gun itself, the hand, is pointed

21 towards you?

22 A. Yes.

23 Q. Okay. So the weapon, then, is pointing

24 towards the north?

(Deposition p 201)

1 A. Not all the way to the north.

2 Q. Not all the way, but like northeast?

3 A. Yes.

4 Q. It's coming around?

5 A. It's coming around.

6 Q. Okay. And you thought at that point in time

7 he was turning -- you thought your life was in

8 jeopardy, right?

9 A. Yes, sir.

10 Q. You thought that he was going to try to kill

11 you?

12 A. He was going to try to shoot me at least.

13 Q. That's right.

14 A. Yes, sir.

15 Q. All right. And that's when you fired your

16 two shots?

17 A. Yes, sir.

(Deposition p 257-258)

On pp 257-258 Officer Hill testifies that in viewing the video he is able to determine the point at which Justus Howell turned toward him and Hill could see the gun.

Officer Hill responds "yes" to a question that "And when he turned to the left and presented his left side to you" (p 257).

It is at that point when he presented his left side that he saw the weapon and that is when he fired the two shots.

The video is played and Officer Hill states "now" at the point where he shot him and states that he believes he was in the driveway at the time he shot him testifying "I believe so, if you look right there" (p 258).

Officer Hill reviews the video again and points out the point at which he claims that Howell turned and pointed the gun at him. Atty Duffy points out that the video

frame number is # 257 and Officer Hill states “Okay”. An additional reference mark (time lapse) is also noted by Mr. Duffy as being 17:13; Officer Hill testifies “This is when he’s turning to his left” (p 259).

Officer Hill cannot determine from the video the exact frame at which he shot (p 262), although, as detailed above, he repeatedly testified that he shot Howell when Howell was purportedly turned towards him.

B. The Surveillance Video Contradicts Officer Hill’s Account

i. Howell’s supposed turn toward Hill

Officer Hill testified that he fired two shots in rapid succession as fast as he was able when Justus Howell was presenting his left side to him, and he has identified frame # 257 as the point in the video when the presentation of Howell’s left side purportedly occurred.

Frame 257 depicts Officer Hill located just off the concrete walkway which is in front of the Spaeth’s building and it shows Officer Hill has stepped onto the asphalt driveway surface while Howell is running south-southeast several feet before reaching the tree in the front yard of the white residence at Frame 257 and multiple frames preceding this clearly show that Justus Howell is constantly facing forward in the direction that he is moving, his right brachium (upper arm between shoulder and elbow) is silhouetted against the white residence and is shown to be in front of and to the right of his torso and at a right angle to the ground plane. In frame 256, Justus Howell’s right arm from his shoulder to his hand is positioned nearly straight downward toward the ground and slightly out front of his body, and this continues to Frame 257. Howell’s upper body never turns in the manner described by Officer Hill; Howell’s right arm never extends across his body as described by Officer Hill.

Based on the video, and my extensive experience in reviewing video evidence of shooting incidents for purposes of shooting reconstructions, it is my conclusion that Justus Howell did not turn to his left as Officer Hill has described in the interview and deposition testimony and as he physically demonstrated during his deposition testimony. Additionally, based on the positioning of Justus Howell’s upper body in Frame 257, particularly his right shoulder and upper right arm, I conclude that it was not possible for Justus Howell to have extended his right hand across his body to point a gun back at Officer Hill from the left side of Howell’s body.

ii. The silver Kimber cannot be seen in the video

According to Officer Hill, Justus Howell had a silver colored firearm in his right hand while he was being pursued by the officer. The firearm recovered at the scene is a 9mm caliber Kimber Model Solo Carry STS Semi-automatic pistol. The photographs taken by the task force show that the firearm has a satin silver finish known as KimPro II which is highly corrosion resistant. The finish of that firearm appears from the photographs to be in very good condition and without any significant discoloration, debris, or damage. The weather conditions at the time of the shooting were clear and sunny. In fact, the video shows the reflective flash of Officer Gildea’s police badge due to the sunny illumination which also highlights other objects in the video including the window borders of Spaeth’s, the light colored sidewalks and pathways, and the face and hands of Officer Gildea in the background.

The video evidence does not support that Howell was carrying a firearm in his right hand. In fact, the video evidence does not provide any visual documentation of Justus Howell with a silver object (gun) in his hand at any time in the video. Officer Hill testified during his deposition that he was unable to see anything resembling a light colored object or gun in the video.

In contrast, numerous frames of the video (including Frames 240, 252, 257, 264, 270, 275, 284) show Officer Hill holding his Sig-Sauer Pistol, including the silhouette of the pistol and the contrast of the dark pistol against Officer Hill's light skin. Yet, the video shows numerous frames of Justus Howell's dark skin but no contrasting light colored reflective object in his hand and no silhouette of any firearm in his hand against his skin or the background. Based on the fact that Officer Hill's dark-colored firearm is visible in the video, I would expect that a silver-colored firearm would also have been visible at least once in the video if Howell held it in his right hand.

C. The Gunshot Wound Entrance Angles, as Reflected in the Autopsy Photographs, Contradict Officer Hill's Account.

Deposition Exhibits 20 and 22 (autopsy photographs) depict the location of the gunshot wound to Howell's right shoulder and a trajectory rod reflecting the angle of entry. Based on my review of those photographs, the video, and Officer Hill's deposition and interview, and my extensive experience cited above regarding the forensic analysis of gunshot wound entrance angles in determining the relative positions of shooter and victim, I conclude that it was impossible for Howell to have suffered that shot if he had been turning to the left as Officer Hill described in his testimony and as he demonstrated in Deposition Exhibit 21. Additionally, I conclude from the photographs that the angle of that shot relative to Howell's body was between 30 and 60 degrees. Based on Officer Hill's testimony that Howell's relative position to Hill was between one o'clock and two o'clock when he shot Howell, I further conclude that Howell could not have been turned when he was shot, but was instead facing forward in the direction in which he was running. Because each hour on the clock equals 30 degrees of angle, Hill's testimony is that Howell was positioned between 30 and 60 degrees from Hill's location, which corresponds exactly with the angle of entry of the gunshot wound to the shoulder. Therefore, I conclude that the 30-60 degree angle of entry of the gunshot wound resulted from the relative positions of Hill and Howell, and not because Howell was turning toward Hill. To the contrary, those facts exclude the possibility that Howell was turned when he was shot. According to the demonstration provided by Officer Hill at his deposition where he described being to the left of Justus Howell at 1 o'clock to 2 o'clock from Hill's position when he fired the two shots as Howell allegedly turned to the left with a gun, that orientation would have resulted in both gunshots entering the front of Howell's body, not the back.

Autopsy Photo 80 depicts a gunshot wound to the lower left back. The trajectory rod reflects an extreme upward angle of the entrance wound for that gunshot. If the angle of entry of a gunshot wound for a person standing upright would be at zero, the angle of entry of this gunshot wound is nearly 90 degrees, which means that Howell's torso would have had to be nearly parallel to the ground when he was shot. However, the video reflects that Howell's torso was not in that position at Frame 257; indeed, his torso was not in that position at any point in the video until Howell was collapsing to the ground. Therefore, I conclude that this shot did not occur anywhere near frame 257. Moreover, I note the deposition testimony of the coroner, Dr. Rudd, that this shot was the fatal shot and that Howell would have quickly collapsed from that shot.

The conclusions regarding gunshot wound angles expressed in this report, as I have done throughout my career in law enforcement and as an expert witness, are not medical opinions. Those conclusions are based on my expertise regarding firearms and terminal ballistics, and they are based

on generally utilized and accepted methods for purposes of shooting reconstruction and shooting dynamics.

D. The Locations of the Casings Contradicts Officer Hill's Account

There are two (2) .45 Auto caliber discharged cartridge cases at the scene of the shooting which were extracted and ejected from Officer Hill's Sig-Sauer Model 1911 TacOps Semi-automatic Pistol.

- One (1) discharged cartridge case identified by Crime Scene Placard # 1 is recovered from the sidewalk in front of 2391 Galilee Ave. *See* Task Force Photo DSC_0067.
- One (1) discharged cartridge case identified by Crime Scene Placard # 2 is recovered from the front yard of 2391 Galilee just east of a tree in the front yard and approximately 10' west of the center of the concrete walkway which runs along the front of the residence. *See* Task Force Photo DSC_0043.

This pistol was not tested by the LCMCTF for ejection patterning; however, there is sufficient data and information available from treatise sources and the known mechanical design of the weapon regarding its extractor and ejector location to rely on to estimate the general direction and path which a discharged cartridge case will likely take when ejected from the ejection port after being fired when being held properly in a conventional vertical and horizontal police shooting orientation as shown in the video recording of the shooting, and to exclude with reasonable certainty other directions and paths which a discharged cartridge case will not take when ejected under those same circumstances.

- i. Officer Hill's two "rapid succession" shots took no more than .25 seconds.

As discussed above and set forth in more detail as follows, Officer Hill testified that he took both shots in "rapid succession" and as "fast as I could pull the trigger," which he said would take two-tenths to three-tenths of a second:

(Hill Interview, p 2)

The Lake County Major Crime Task Force Interview of Officer Hill reports that Officer Hill stated that "Ofc. Hill said he fired two rounds in rapid succession at the armed subject aiming at the torso".

(Deposition p 196)

- 9 Q. How long does it take for your weapon to
- 10 release two -- two shots?
- 11 A. Two- to three-tenths of a second.
- 12 Q. Okay. I mean, pardon the expression, the
- 13 noise. It's like boom/boom. It's immediate,
- 14 right?
- 15 A. Yes, sir.
- 16 Q. It's an automatic, correct?
- 17 A. It is.
- 18 Q. Okay.
- 19 A. It's not an automatic firearm, if that's what

- 20 you're referring to.
21 Q. No, but you don't have to do anything
22 between shots except pull the trigger?
23 A. Correct.

(Hill Deposition p 277)

- 1 Q. Okay. So you're not -- you're saying you
2 didn't shoot him once, and then he kept running,
3 and since he was still fleeing, you shot him a
4 second time?
5 A. To the best of my recollection, these were as
6 fast as I could pull the trigger.

Officer Hill further testified that he carries his Sig-Sauer Model 1911 Semi-Automatic Pistol “at the ready” which means that his first and second shots are accomplished using Single Action Only (SAO) mode. Officer Hill’s Sig-Sauer Model 1911 has a factory specification rated at 5 lbs of force to release the trigger. The reduced length of pull and force will result in a reduced elapsed time to mechanically actuate the trigger mechanism.

Based on studies in reaction time when compared to Officer Hill’s level of experience, I conclude that Officer Hill could release two shots in no more than .25 of a second. Research and studies on this element of shooting dynamics is presented as the foundation upon which the detailed analysis of time, motion, and distance can be determined. I have utilized peer-reviewed published treatises in hundreds of shooting reconstruction incidents and have testified numerous times across the country and internationally using the data; in literally hundreds of other cases, the data has been utilized in my formal and informal reports. That data reflects that the average trained police officer is capable of firing two shots in rapid succession in an elapsed time of approximately .25 seconds. Jason Alexander’s study showed that the elapsed time to shoot multiple shots as fast as the trigger could be pulled showed an average time for two shots to be:

- > .41 seconds for a person who had never fired a gun before
- > .22 seconds for an experienced shooter with 20 years of military, law enforcement and competitive shooting.
- > .16 seconds for a person with 20 years law enforcement experience and competitive shooting.
- > In the overall testing of 32 police officers ranging in age from 23 to 57 years old, in a series of 36 tests consisting of a total of 296 shots fired, with the officers having between less than 1 year law enforcement experience to 25 years as a police officer, the average interval was .23 seconds between shots.

Officer Hill’s Master Training Records, Task Force Interview, and Deposition testimony were reviewed to determine his proficiency, training level, and expertise in shooting a pistol. His Master Training Record shows that he has had a significant degree of training that far exceeds that of the average police officer. This evidence reflects that Officer Hill possesses a significant record of basic and advanced training with multiple types of firearms; he is a member of the SWAT Team and trains in close quarters, room clearing, etc. with various types of firearms. Officer Hill trains frequently with NIPAS; shoots at a range on a personal basis at least once every two months, has attended SWAT School and multiple other firearms training courses. It is my conclusion that Officer Hill possesses a high level of firearms training, experience and proficiency that is well

above that of the average trained police officer and that his performance likely would match the results reported in studies and research for persons that were considered experienced and competitive shooters. I further conclude that based on his training and experience, Officer Hill would have had the ability to fire the two rapid shots in succession at Justus Howell in an elapsed time of no more than .25 of a second which applies to the average trained police officer.

- ii. The two casings ejected to the right-rear, not forward.

The firearm that shot Howell was a Sig Sauer Model 1911 TacOps Pistol. That pistol will discharge a live cartridge in the chamber which results in the pistol extracting the just fired cartridge with the extractor which is located at approximately 3 o'clock on the right side of the slide at the rear of the ejection port; as the slide moves back under recoil with the extractor having hooked the rim of the discharged cartridge case, the cartridge clears the chamber and the head of the discharged cartridge then strikes the ejector which is mounted on the left side of the frame at 7 o'clock. When this cartridge strikes the ejector it is ejected out through the ejection port on the right side of the slide and it will eject to the right-rear of the shooter with a slight upward arc. After the discharged cartridge is ejected to the right-rear, it will have a Point of Impact (POI) on a horizontal ground plane to the right-rear of the shooter. When properly gripped and held in a conventional manner with the barrel generally horizontal to the ground plane and the slide generally in a vertical plane, the ejection pattern as to the Point of Impact will not vary significantly such that it can be expected to be to the right-rear of the shooter, especially when the person shooting is right handed and has the pistol extended outward from the body at shoulder level. Under these circumstances, it is not possible for the cartridge to eject forward from the shooter's position.

From the Point of Impact off a relatively level surface, discharged cartridge cases are subject to roll or bounce. However, because of the right-rear direction of the ejection of the casings and the momentum of those ejected casings, it is extremely unlikely that they would bounce or roll any significant distance forward (i.e., in the direction in which the shooter was facing) of the shooter's position. In other words, the final resting place for a casing under such circumstances is very likely to be behind the shooter's position, and extremely unlikely to be in front of the shooter's position by any significant distance.

The elapsed time for the discharged cartridge case to clear the ejection port and travel approximately 1 foot to the right-rear of the shooter from a shoulder level, extended arm position is between 1/16 to 1/8 of a second and this is designed to prevent discharged cartridges from striking the shooter or obstructing the shooting operation. The video of this shooting incident shows that after Officer Hill removed his Sig Sauer Model 1911 from his holster he was holding the pistol in the conventional manner with his arms extended outward from the body at shoulder level. The pistol was in a general horizontal and vertical orientation as he looked down the top of the slide where the front and rear sights are mounted.

Based upon the speed at which the discharged cartridge cases will clear a right handed shooter's body by at least 1' while arcing upward to the right-rear, it is my opinion that the ejection of the discharged cartridge cases from Officer Hill's firearm would not have been interrupted or significantly modified from its intended design. Even if Officer Hill was running forward at full speed, which he was not, this pistol is designed so that the discharged cartridge cases being ejected would have cleared the pistol uninterrupted by his body or arm, and would have ejected to the right-rear.

I also conclude that the Point of Impact for the discharged cartridge cases fired by Officer Hill's Sig Sauer Model 1911 Pistol would have been within the normal expected direction to his right-rear. I also conclude that the Point of Impact under these conditions would not have been in front of Officer Hill. Furthermore, based on my above conclusion that Officer Hill fired both rounds within .25 seconds of each other, I conclude that both cartridge cases would be within close lateral proximity to each other at the Point of Impact. Finally, based on the above, I conclude that it is extremely likely that the final resting place for the casings would have been behind Officer Hill's position when he fired those shots, and it is extremely unlikely that the final resting place would have been in front of his position by any significant distance.

- iii. The locations of the casings contradict Officer Hill's version that he shot Justus Howell when Howell supposedly turned toward him.

As detailed above, Officer Hill testified that he fired the two shots as fast as he could when he (Hill) was still in the driveway near Spaeth's Woodworking building and when Howell purportedly turned toward him, which Hill identified to be at Frame 257 of the video. Officer Hill also states that he fired when Justus Howell was at an angle to him of approximately 1 o'clock to 2 o'clock. Frame 257 depicts Officer Hill located just off the concrete walkway which is in front of the Spaeth's building and it shows Officer Hill has stepped onto the asphalt driveway surface

With the first shot being fired at Frame 257, the second shot would have occurred approximately .25 of a second later at Frame 262, since the video is based on 15 frames per second. The calculation to determine where .25 of a second occurs in the video is to determine $\frac{1}{4}$ of the frames per second which would be approximately 4 frames, however in order to view this incident in a light most favorable to the defendant, I have taken his estimate of being able to fire two shots in 2/10ths to 3/10ths of a second and utilized the 3/10ths to allow for 5 frames to elapse. Even with 5 frames elapsed and observing where Officer Hill is at Frame 262, the discharged cartridge case directly to the east of the tree (Placard # 2) would still be south (in front) of the officer approximately 19' to 21'. The location of that casing is in complete conflict with the ejection pattern of the Sig-Sauer based upon the pistol being held at shoulder level, horizontal and vertical in a conventional shooting grip and orientation, and there is no obstacle or other issue which would alter the known ejection pattern. Indeed, the location of the cartridge case near the tree would be in direct conflict with that shot purportedly being fired from anywhere on the driveway, as Officer Hill claims, as follows:

(Deposition pp 27)

- 11 Q. Okay. Did you see in the video -- does the
- 12 video depict when you shoot Justus Howell?
- 13 A. Yes.

(Deposition pp 201-202)

- 18 Q. All right. If you can help me here, go back
- 19 to Exhibit 5.
- 20 A. Okay.
- 21 Q. Could you tell us where in Exhibit 5 you
- 22 were standing when you fired the shots.
- 23 A. I was not standing.
- 24 Q. Okay. Where were you running. Were you on

- 1 the driveway?
- 2 A. Yes, in the driveway.
- 3 Q. Okay, in the driveway.
- 4 And where was Mr. Howell when you fired,
- 5 in -- from this photo? Was he -- I see there's two
- 6 trees there. One looks like it's in a parkway and
- 7 one looks like it's in the yard of the house. Do
- 8 you see those two trees?
- 9 A. Yes.
- 10 Q. Okay. Was he left of the trees?
- 11 A. Yes, he was left of the trees.

The location of the discharged cartridge case found south of Officer Hill, just east of the tree in the front yard (Crime Scene placard # 2) is in direct conflict with Officer Hill's claim of having fired the two shots in rapid succession while located in the driveway. From Officer Hill's location for these shots, the distance to the discharged cartridge case with placard #2 is approximately 19' to 21' forward (linearly) and this is not in agreement with the ejection pattern of the Sig-Sauer Pistol for either the Point of Impact or for its potential final location even when considering the roll or bounce of the casing after impact. As noted above, it is extremely unlikely that the final location of that casing would be any significant distance forward from Officer Hill's position when he shot, and certainly not 19' to 21' forward of that position. Moreover, a cartridge case will not roll or bounce a significant distance across grass forward of the shooter's position. Indeed, based on the location of that casing, I conclude that Officer Hill was at least at frame 287 (and most likely later than frame 287) when he fired that shot (timestamp 19:13), which would be at least two full seconds after frame 257 (timestamp 17:13) when Officer Hill claims that Justus Howell turned toward him with a gun.

In addition, the location of the discharged cartridge case identified with Placard #1 is inconsistent with Officer Hill's testimony that he fired when Howell purportedly turned at him at Frame 257. The location of that discharged cartridge case was far forward (linearly) of Officer Hill's location at Frame 257, which would be inconsistent with the ejection pattern for the Sig-Sauer if Officer Hill fired that shot from or near that location. Based on the locations of both casings, and assuming that Officer Hill fired both shots "in rapid succession" and as "fast as [he] was able to pull the trigger," as he has testified, the first shot would have been no earlier than frame 281 (timestamp 18:73), which is 1.6 seconds after frame 257 (timestamp 17:13) when Officer Hill claims that Justus Howell turned toward him with a gun.

The video reflects that Justus Howell never turned toward Officer Hill at any point from frame 257 forward, including when Officer Hill took those shots as reflected by the location of the casings. (I have already explained above how the video demonstrates that Justus Howell did not turn toward Officer Hill at frame 257, as Officer Hill asserts.)

6. The Surveillance Video Contradicts Officer Hill's Claim Regarding When He Aimed His Pistol At Justus Howell.

Officer Hill testified that he did not point his pistol at Justus Howell until he (Hill) was already on the driveway for Spaeth's and only after he claims that Howell turned and pointed a gun at Officer Hill:

(Deposition pp 189-193)

Officer Hill testifies that he did not put his hands together and point his weapon at Mr. Howell's back until he (Hill) "was on the driveway".

He grabbed his weapon with his left hand when he shot at him.

Prior to Howell allegedly turning around toward him, Officer Hill testifies that he "does not believe" that he had both hands on his weapon.

When Officer Hill was running in front of the woodworking store to the driveway his weapon was swinging as he was running.

"It's moving up and down as I'm running with it".

In the process of running "I believe in the motion of running, in pursuing him, that the gun may have crossed as I was running with it".

When he put his left hand on the right hand with the weapon, Officer Hill did this for accuracy purposes.

Hill never pointed his weapon at Mr. Howell until Howell (purportedly) threatened him with a gun, stating "that is correct".

It was at this point when Howell (purportedly) had his left side presented to him and Howell had a gun in his right hand that Hill claims he could see the weapon. (At this point, Officer Hill demonstrates the way Justus Howell turned to the left with the gun in his right hand)

Based on my review of the video and my knowledge and experience in how police officers are trained to hold and aim their weapons during an incident such as this, and based on my review of Officer Hill's personal training and experience, I conclude that Officer Hill's hands were already up with the Sig-Sauer pointed at Howell before Frame 257, and he was primed to shoot at that frame.

In particular, the video depicts the following: As Officer Hill turns from moving west along the north side of Spaeth's Woodworking shop to go south along the front of the shop, his right hand moves down to where his holster would be located that contains his .45 Auto Caliber Sig-Sauer Pistol; he then moves south but the video is obstructed by a tree. **At Frame 236 Officer Hill** appears from the tree with arms extended holding his Sig-Sauer Pistol; neither his left or right hand are swinging as he described in his testimony, nor are his hands moving in a manner that his pistol casually crossed over toward Justus Howell; he is clearly pointing or aiming at Justus Howell. This is 21 frames (1.4 seconds) prior to when Officer Hill testifies that Justus Howell turned to the left. From the time that he appears back on the video from behind the tree his arms are extended out from the shoulder holding his pistol and remain there until Justus Howell has collapsed. At that point, Officer Hill is standing at the feet of Howell and his right hand moves down to his right side to put the pistol into his holster. At no point in the video does it show either Officer Hill's right or left arm swinging while he is moving. I thus conclude that Officer Hill withdrew his pistol from his holster as he was moving south along the front of Spaeth's Woodworking shop during the time that he was behind the tree in the video; that he reappeared in the video with his pistol extended

outward at shoulder level from his body and that he was holding the pistol in the manner in which officers are trained to use a two hand hold I further conclude that the video shows Officer Hill was aiming or pointing his Sig-Sauer Pistol at Justus Howell at least 1.4 seconds prior to the point in the video at Frame 257 where Officer Hill asserts that Justus Howell turned toward him and presented his left side while holding a gun in his right arm. I conclude that Officer Hill was aiming or pointing his pistol at Justus Howell when he was moving along the front of the Spaeth's Woodworking shop approximately 14' before Hill reached the driveway.

7. Officer Gildea's Location When *he* Heard the Gunshots Contradicts Officer Hill's Account of When he Fired Those Shots.

Officer Gildea is first observed in the enhanced video at Frame 212 moving north from behind 2391 Galilee Ave. He continues north through the rear of the driveway and disappears from view of the video at Frame 234, blocked from view by the side of Spaeth's. Howell reaches the driveway at approximately Frames 223-224. Gildea reappears in view at about Frame 260, running south toward 24th Street, and he disappears from view behind 2391 Galilee Ave. at about Frames 273-274. At that point in the video, Officer Hill is already stepping onto the front yard of 2391 Galilee Ave. Officer Gildea testified that he did not hear the gunshots while he was running through the rear of Spaeth's driveway or the rear of 2391 Galilee Ave., but that he instead heard the gunshots only after he turned the southeast corner of that residence. (Dep. 130-132)

Based on my experience in reviewing video evidence of shooting incidents and my experience and background in estimating the dynamics of movement from time and distance, as well as my review of the video and Officer Gildea's testimony, I further conclude that Officer Hill could not have been in the driveway (at or soon after Frame 257) when he fired the shots. In fact, because Officer Gildea did not hear the gunshots until he had turned the southeast corner of that house, the video evidence compels the conclusion that Officer Hill would have had to have been a significant distance further south onto the front yard of that residence when he fired his shots. That conclusion is also consistent with the locations of the cartridge cases as discussed above.

RONALD R. SCOTT

A handwritten signature in black ink that reads "Ronald R. Scott". The signature is written in a cursive style with a horizontal line underneath the name.

Exhibit 1



RONALD R. SCOTT, M.A., M.S.

Forensic Firearms & Ballistics

37881 N. 10th Street

Phoenix, Arizona 85086

Tel: 623.764.6371

Email: ronaldscott@azballistics.com

www.azballistics.com

www.shootingreconstruction.org

***Firearms ▪ Ballistics ▪ Police Shootings ▪ Shooting Reconstruction & Investigations
Toolmarks & Comparison Microscopy ▪ Dynamics of Shooting Incidents ▪ Crime Scenes ▪ Gunshot
Distance ▪ Daubert Consultation ▪ Gunshot Wounds ▪ Hunting & Firearms Safety ▪ Trajectory***

Curriculum Vitae

Formal Education:

- 1991 - Master of Science in Management, Lesley College, Cambridge, MA.
- 1982 - Master of Business Administration, 1 year of study in Macroeconomics, Analysis and Policy, Salem State College, Salem, MA.
- 1981 - Master of Arts in Criminal Justice, Anna Maria College, Paxton, MA.
- 1980 – Bachelor of Science Cum Laude, Law Enforcement, Northeastern University, Boston, MA.
- 1979 - Graduate Study Criminal Justice, American International College, Springfield, MA.
- 1978 – Associate in Science, North Shore Community College, Beverly, MA.
- 1967 - 1969 Accounting & Finance, Bentley College, Waltham, MA.

Informal, Technical, Forensic Education/Training:

- 2013 – Class 2 and Class 3 Vendors Exhibition, Phoenix, AZ.
- 2012 – U.S. Department of Justice, NIJ “Forensic Photography”.
- 2012 – U.S. Department of Justice, NIJ “Principles & Thought Processes of Crime Scene Investigation”.
- 2012 – U.S. Department of Justice, NIJ “Answering the NAS: The Ethics of Leadership and the Leadership of Ethics”.
- 2010 – SAR NFA Class 3 Manufacturer’s Exhibition, Phoenix, AZ.
- 1993 – Total Quality Management Program – MSP Academy, New Braintree, MA.
- 1991 – Contemporary Liability Issues for Modern Police Agencies, Springfield, MA.
- 1991 – Smith & Wesson Academy, Contemporary Firearms Issues, Springfield, MA.
- 1981 – MIT Leadership Program, Massachusetts Institute of Technology, Sloan School of Business, Cambridge, MA.
- 1981 – Forensic Examination (Medico-Legal) of Violent Death, Babson College, Wellesley, MA.
- 1980 – Bureau of Alcohol, Tobacco, & Firearms, National Firearms Academy, Firearms Examiner Course, Boston, MA.
- 1973 – Massachusetts State Police School of Handguns, Achievement Grade “Master”.
- 1973 – Graduate of the Massachusetts State Police Academy (17 weeks curriculum)
- 1969 – 1970 Mechanical Engineering in HVAC, Raisler Corp., Boston, MA.
- 1966 – 1969 Mechanical Engineering Apprentice Program and machinist , GE, Lynn, MA.
- Continuing study in Newtonian Mechanics.

- Case: 1:16-cv-03949 Document #: 82-1 Filed: 02/01/18 Page 22 of 32 PageID #: 514
- 1966 Ordnance specialist in research, testing, repair, and maintenance U.S. Army including Explosive Ordnance Reconnaissance certification.

Voting Member of the American Academy of Forensic Sciences Standards Consensus Board on Firearms and Tool Marks:

The Firearms and Toolmarks Consensus Body focuses on standards and guidelines related to the examination of firearms and toolmark evidence. This includes the comparison of microscopic toolmarks on bullets, cartridge cases, and other ammunition components and may also include firearm function testing, serial number restoration, muzzle-to-object distance determination, tools, and toolmarks.

The Consensus Board is responsible for creating and approving by consensus Forensic Standards, Technical Reports, and Best Practice Recommendations for the forensic science community and conformance with the American National Standards Institute (ANSI).

Expert Testimony or Significant Casework Venues:

International:

- | | | |
|---------------|---------------|------------------|
| • Afghanistan | • Canada | • United Kingdom |
| • Iraq | • Israel | • Virgin Islands |
| • Nigeria | • Philippines | • Pakistan |
| • Haiti | | |

National: All 50 states.

Innocence Projects: Medill (Northwestern University), Northern Arizona, Downstate Illinois, Wisconsin (Wisconsin University).

Expertise:

- | | |
|--------------------------------------|--|
| • Police shootings | • Shooting reconstruction |
| • Crime scenes | • Daubert/Frye |
| • Tool mark microscopy | • Shooting dynamics |
| • Reaction time | • Firearms safety |
| • Gunshot wounds | • Theory of Identification |
| • Distance determination testing | • Drag model analysis |
| • Chamber pressure | • Hunting protocol |
| • Defective design | • Time – Speed – Distance |
| • Catastrophic failures | • Kinetic energy calculations |
| • Gyroscopic stability | • Macro measuring digital/mechanical instrumentation |
| • Photomicrographs | • Training |
| • Bullet Drop – Path – Lead | • SmartDraw and/or PowerPoint |
| • Wind deflection and diagramming | • Modified, improvised, full-auto conversions |
| • Discharged cartridge case patterns | • Gunshot distance determination testing |
| • Departmental review evaluation | • Angle of incidence |
| • Prison made firearms | • Velocity testing |

Police Shootings:

Since 1979 I have been involved in the forensic, criminal, or internal investigation of approximately 400 police shootings where the officer either discharged his firearm or was fired upon.

Gunshot Wound Ballistics:

Trained extensively with Drs. George Katsas (Chief Medical Examiner of Suffolk County and Forensic Pathologist at the Southern Mortuary) and Albert Shub (Medical Examiner of Essex County), attended numerous presentations by Drs. Vincent DiMaio, Martin Fackler, and George Katsas.

Made forensic presentations at medical symposiums in MA and NH.

Conducted, supervised, reviewed, or assisted at hundreds of fatal/non-fatal gunshot incidents including wound ballistics interpretation prior to the institution of the modern Medical Examiner system.

Have attended approximately 400 post mortems involving gunshot wounds and trauma.

Specialized Firearms/Ballistics Training:

Armorer courses and/or actual familiarization with manufacturing, design, function at factories for:

- | | | |
|--------------|-------------------|------------------------|
| • Beretta | • Marlin | • Sturm Ruger |
| • Browning | • Mossberg | • Smith & Wesson* |
| • Colt | • Remington | • Thompson Center Arms |
| • Dan Wesson | • Sig-Sauer* | • Winchester |
| • Glock* | • Saco-Maremont** | • Iver Johnson |
| • Ithaca | • Savage Arms | • Gunsmithing |

* Indicates the extended law enforcement armorer course.

** Military M60 MG and hammer forging of tank and artillery barrels.

Military - U.S. Army (1963-1966):

- Fort Gordon, GA Basic Training and Advanced Infantry Training (AIT)
- Fort Benning, GA – Paratrooper School
- Fort Dix, NJ – Explosive Ordnance Reconnaissance School
- Fort Dix, NJ, US Army Ordnance School.
- Aberdeen Proving Ground, MD US Army Small Arms Repair School.
- Aberdeen Proving Ground: ammunition, trajectory, chamber pressure testing; prototypes.
- 2 1/2 years with 40 Ordnance Co. researching development of Eastern Bloc weapons.
- Company armorer .50 Cal MG, .45 ACP, M14 and M14A1 Rifles, Thompson .45 ACP.
- Crew chief .50 caliber M2 Browning HB Machine Gun.
- 1965 - Operation "Power Pack" Dominican Republic.

Ballistics & Weapons Training/Experience 1963 –present:

- Massachusetts State Police Ballistics Section – Commanding Officer.
- Massachusetts State Police – STOP Team weapons training and evaluation including full automatic, grenade launchers, tear gas, incendiaries,
- Massachusetts State Police – Transitional evaluation & testing of semi-automatic pistols.
- MSP Academy & Department Firearms Training (over 400 hours).
- US Army Natick Research Lab – Ballistic Materials Research and Testing.
- US Army Watertown Arsenal, United States Army Materials and Mechanics Research Center.
- Ft. Devens Special Warfare Weapons Center – 10 Special Forces Group.
- Association of Firearms and Toolmark Examiners.
- IHMSA – Professional Shooting Competition and Firearms Development.

- Case: 1:16-cv-03949 Document #182-1 Filed: 02/01/18 Page 24 of 32 PageID #:516
- Ammunition reloading and propellant burn rates.
 - Camp Curtis Guild – National Guard Training Facility (Military weapons).
 - Camp Edwards – National Guard Training Facility (Military ordnance & firearms).
 - Bureau of Alcohol, Tobacco & Firearms National Academy Firearms Examiner Training Course.
 - MA Criminal Justice Training Council.
 - Continuing research through readings, casework, attendance at scientific meetings.
 - National Institute of Justice (NIJ) of the U.S. Department of Justice.
 - Triangle Tool and Die, Lynn, MA.
 - Periodic attendance at forensic presentations and lectures.

Lectures and Presentations:

Harvard University
 Northeastern University
 Boston University
 District Attorney Seminars/Conferences
 American Academy of Forensic Sciences

Massachusetts State Police Academy
 Municipal Police Academy
 MDC Police Academy
 Metro Boston Emergency Medical System
 Sportsman's Clubs (Firearms & Hunter Safety)

Other Experience:

- Extensive reloading knowledge
- Professional shooting awards
- Barrel performance
- Ammunition penetration tests
- Collector & Federal Firearms Dealer
- Mil-Spec Testing
- Less than lethal ammunition
- Built/customized numerous firearms
- Chamber pressure trace testing
- Long-range trajectory testing
- Improvised firearms
- Destructive testing
- Silencers and improvised devices

Publications:

I choose not to engage in written publications.

MASSACHUSETTS STATE POLICE 1973 -1998:

1973: Massachusetts State Police Academy Graduate: 17 Weeks in residence police training course with approximately 80 hours of dedicated firearms and tactical shooting.

1973 – 1979 Field Operations: Criminal/Traffic Investigations, Logan Airport Delta Airlines crash, Boston Busing enforcement, State Prison riots, state forest and game preserves, Salisbury Beach Detail. **Senior Trooper** on 6-Officer Selective Enforcement “55 Team”; commercial vehicle enforcement, Presidential security, Seabrook Nuclear Power Plant, sporting events, crisis response, major traffic incidents, local police assistance, Executive Security, criminal investigations, crime scenes, and special assignments.

1979 – 1992: Ballistics Section: Commanding Officer of two labs, trained 5 additional firearms experts. Conducted forensic investigations statewide and out-of-state. Combined labs averaged 1500-1700 cases annually for fatal, non-fatal, accidental, defective design, malfunctions, voluntary/involuntary, toolmark macroscopy, gunshot distance determination, trajectory, crime scenes, autopsies, wound interpretation, shooting reconstruction, firearms safety, ballistics, improvised and prison made firearms, modified and altered full auto, catastrophic failures, pen guns, police procedures. Conducted agency transitional firearms evaluation testing 1987-88. Member of Firearms Review Board. Shooting investigations and reconstruction of incidents involving organized crime, bank and armored vehicle robberies, officer involved shooting incidents, hunting incidents.

1992: Shift Commander Troop "H": General Headquarters Operations Section of Superior State Troop operations, 911 system, communications system, special investigations, consolidation of police forces, authorized and coordinated the use and response of department services to State Police entities, local cities and towns.

1992 – 1995: Shift Commander Troop "H": Supervised 4 barracks covering metropolitan Boston Special advisor on the Consolidation of Police Forces. Training Coordinator for new Officers; department internal investigations, commanded special details.

1995: Shift Commander Troop "A": Supervised 6 barracks responsible for northeast quadrant of Massachusetts. Training Coordinator for new Officers; department internal investigations, commanded special details.

1995 – 1997: Commanding Officer-Revere Barracks: Responsible for 65-officer municipal oriented policing operation covering cities of Lynn, Nahant, Chelsea, E. Boston, Winthrop, and Revere. Gang activities. Specialized units included motorcycles, off-road and beach patrols, K-9, Mounted Unit. Primary jurisdiction on state and MDC beaches, parks, roads and waterways.

1997: Shift Commander Troop "A": Supervised 6 barracks responsible for northeast quadrant of Massachusetts. Training Coordinator for new Officers, department internal investigations, commanded special details (sporting events, etc.).

1997-1998: Staff Inspector: Conducted investigations involving ethics, misconduct, use of force, shooting investigations, audits of drugs, cash, evidence, contraband, security and special investigations. Unannounced inspections of personnel and equipment. Reported directly to Superintendent/Colonel of State Police.

1973-1998: Annual In-Service: Various annual certifications and non-certification areas; CPR recertification, law updates, firearms training and qualification, pursuit and high speed driving, skid pan, physical agility, policy and procedure, rules and regulations, ethics, tactical operations, etc.

Professional Employment 1967-1973:

- Mechanical Engineering Apprentice Program, General Electric, Lynn, MA. Jet engine fabrication, assembly, and inspection.
- Mechanical Engineering (on-site) apprenticeship for Raisler-Lappin Corp., A Joint Venture, at the NEMNB 37-story office building, Boston, MA.
- Senior accountant and auditor, O.C. Moyer & Co, Certified Public Accountants, Boston, MA. Medium sized local public accounting firm providing financial services to professional athletes, corporations, and non-profit entities.
- Senior auditor and accountant at B&L Management Co., Somerville, MA. Firm specialized in capital venture, investment, development, and management of land, nursing homes, management companies in New England.

Professional Organizations and Societies:

- American Academy of Forensic Sciences (AAFS).
- AAFS Academy Standards Board – Member, Consensus Board for Firearms & Toolmarks.
- International Association for Identification (IAI).
- International Association of Chiefs of Police (IACP).
- American Association for the Advancement of Science (AAAS).

- Case 1:16-cv-03949 Document 83-1 Filed 02/01/18 Page 26 of 32 PageID #:518
- Optical Scientists of the American Association for the Advancement of Science.
 - Association of Firearms and Toolmark Examiners (AFTE) – (Former member.)
 - American Society of Criminology (ASC). (Former member.)
 - NRA – Life Member.
 - Sigma Epsilon Rho Honor Society.
 - Voting Member, American Academy of Forensic Sciences Standards Board, Consensus Board for Firearms and Tool Mark Examinations.

Ancillary Education:

- Massachusetts Institute of Technology, OpenCourseware, “For the Love of Physics”, Professor Walter Lewin.
- Massachusetts Institute of Technology, OpenCourseware, “Introduction to Kinematics”, Professor Walter Lewin.
- Yale University Lecture Series, Fundamentals of Physics, “Vectors in Multiple Dimensions”, Professor Ramamurti Shankar.
- Attendance at presentations and lectures.

Exhibit 2



RONALD R. SCOTT, M.A., M.S.

Forensic Firearms & Ballistics

37881 N. 10 Street

Phoenix, Arizona 85086

Tel: **623.764.6371**

Email: ronaldscott@azballistics.com

www.azballistics.com

www.forensic-ballistics.com

**Firearms ▪ Ballistics ▪ Police Shootings ▪ Shooting Reconstruction & Investigations
Toolmarks & Comparison Microscopy ▪ Dynamics of Shooting Incidents ▪ Crime Scenes Gunshot
Distance ▪ Daubert Consultation ▪ Gunshot Wounds ▪ Hunting & Firearms Safety ▪ Trajectory Analysis**

Cases testified last 4 years:

January/February 2017. AZ v Linda Frias, Maricopa County Superior Court # CR2015-126921-001 DT. Atty Cindy Castillo, Phoenix, AZ. Indirect issue of self-defense; causes of inadvertent, accidental, and unintentional firearms discharge; examination of evidence, trajectory of gunshot.

January 2017. AZ v Timothy C Smith. Mohave County Superior Court # CR-2014-00753. Atty Robin Puchek, Mohave County Public Defender Office, Kingman, AZ. Toolmark conclusions based on the Theory of Identification, microscopy protocol, semi-automatic pistol function, sub-class characteristics v individual characteristics.

December 2016. AZ v Nicholas Lopez. Gila County Superior Court # CR2016-0338. Atty Marc J. Victor, Chandler, AZ. Theory of Identification, toolmark impression and striation evidence, casting materials, generally accepted evidence and crime scene methodology. Daubert Hearing.

October 2016. AZ v Linda Frias. Maricopa County Superior Court # CR2015-126921-001 DT. Atty Cindy Castillo, Phoenix, AZ. Indirect issue of self-defense; causes of inadvertent, accidental, and unintentional firearms discharge; examination of evidence, trajectory of gunshot. *Continuation of Daubert Hearing from September 2016.*

October 2016. AZ v Gary Eisenmann (Pro Per). Maricopa County Superior Court # CR2012-009381-001 DT. Advisory Counsel: Atty Milo Iniguez, Phoenix, AZ. Theory of Identification for Tool Marks, microscopic examination of ballistics evidence, firearms examination and identification.

September 2016. AZ v Linda Frias. Maricopa County Superior Court # CR2015-126921-001 DT. Atty Cindy Castillo, Phoenix, AZ. Indirect issue of self-defense; causes of inadvertent, accidental, and unintentional firearms discharge; examination of evidence, trajectory of gunshot.

July 2016. Royer v Ethington. Maricopa County Superior Court # CV2014-011461. Atty Bret Shaw, Phoenix, AZ. Firearms and hunting safety, gunshot wound, Miroku Charles Daly shotgun design and operation.

June 2016. AZ v Dean Babbitt. Maricopa County Superior Court # CR2014-120137. Atty Michael S. Ryan, Phoenix, AZ. Trajectory, gunshot wound, location of evidence, crime scene, collapse of body and final resting place based on gunshot to head, police forensic methodology. Homicide which occurred in 1996. Recalled for additional testimony.

May 2016. Edsell Ford, et al, v City of Los Angeles, et al. U.S. District Court, Central District of California, Los Angeles, CA, Case No CV14-7268 JFW (JPRx). Attys Federico Sayre (Santa Ana, CA) and Steve Lerman (Los Angeles, CA.). Fatal police shooting of Ezell Ford. Shooting reconstruction, gunshot wounds, trajectory, evidence, origin of gunshot, alleged gunshot occurring during in a struggle.

March 2016. Jason Friday, et al, v Keli Theison et al. Circuit Court of Jackson, MO in Kansas City, No. 1016-CV03792. Atty Kahlie Hoffman, Castle Law Office, 818 Grand Boulevard, Kansas City, MO. Police fatal shooting of Linda Friday, wrongful death claim. Trajectory, gunshot wound, distance, blood pattern, location of evidence, police procedure and tactical issues, dealing with an emotionally disturbed person.

March 2016. AZ v Dean Babbitt. Maricopa County Superior Court # CR2014-120137. Atty Michael S. Ryan, Phoenix, AZ. Trajectory, gunshot wound, location of evidence, crime scene, collapse of body and final resting place based on gunshot to head, police forensic methodology. Homicide which occurred in 1996.

February 2016. AZ v Ramone Trammell. Maricopa County Superior Court # CR2012-132289-001. Atty Marvin Davis, Phoenix, AZ. Aggravated assault and weapons charges. Shooting dynamics, evidence location, gunshot residue, crime scene. Retrial.

January 2016. AZ v Cory Candler. Maricopa County Superior Court # CR2014-130418-001. Attorneys Larry Debus and Larry Kazan, Phoenix, AZ. Cause and effect resulting in unintentional discharge in a firearm struggle, crime scene, trajectory, gunshot wound.

August 2015. AZ v Paulo Rodriguez. Maricopa County Superior Court # CR2014-106322-001 DT. Atty James Redpath, Phoenix, AZ. Microscopic examination of ballistics evidence, Theory of Identification.

June 2015. AZ v Vincent Griego. Maricopa County Superior Court # CR2013-449964-003 DT. Atty Guy Brown, Phoenix, AZ. Residual temperatures over elapsed time in a shotgun barrel and chamber as the result of a single gunshot; shotshell ammunition components and design.

May 2015. Ulrike Dunbar v Riverside, Riverside City Police Department, Sancho Lopez, Brett Porter. U.S. District Court, Central District of CA # EDCV 13-00847 JGB (SPx). Atty Gary Casselman, Los Angeles, California 90034. Police fatal shooting of Brandon Dunbar; issues of gunshot wound paths, trajectory, location of shooter and decedent victim, rebuttal to defendant expert, shooting dynamics and elapsed time, firearms training. Deposition.

April 2015. Thomas v City of Dothan, AL & Darren Moody. U.S. District Court, Middle District of Alabama, Southern Division; Case #: CAFN: 1:13-cv-920-WHA-SRW. Police fatal shooting of Christopher Thomas. Atty Mario Williams, Atlanta, GA. Time, speed, distance issues, reaction time, calculation of vehicle speed, evidence location, wound trajectory, restricted window area, dashcam analysis, location of officers. Deposition.

January 2015. Arizona v Ramone Trammell. Maricopa County Superior Court # CR2012-132289-001. Atty Sonja Duckstein, 3001 E Camelback Road, Phoenix, AZ. Aggravated assault and weapons charges. Shooting dynamics, evidence location, gunshot residue, crime scene. Trial.

December 2014. N.G. AND L.G., Minors by and through their Guardian ad Litem Lilliana Magallon; Sara Perez, Plaintiffs v County of Los Angeles; Leroy Baca, David Chevez, Lawrence Swanson. U.S. District Court, Central District of California NO. CV13-0083127 SVW (FFMx). Atty Gary Casselman, 3415 S. Sepulveda Boulevard, Los Angeles, California 90034. Police fatal shooting of Jilberto Guterrez while handcuffed to a hospital bed, issues of trajectory and wound path, distance, location of shooter. Trial.

October 2014. Reynaldo Munoz, Sr., as surviving father and as Personal Representative of the Estate of Reynaldo Munoz, Jr., and Caridad Lopez, as surviving mother, Plaintiffs, vs. Jeffrey Davis, Individually and as parent of minor child Jack Davis, and Yasmine Davis, individually and as parent of minor child, Jack Davis, Defendants. Circuit Court of the 11th Judicial District, Miami-Dade County, FL., Case # 11-037237 CA 23; Attorneys William Bissett & Peter Murphy, Kubicki-Draper Law Firm, Miami, FL. Retained by defendant for "stand your ground" self defense shooting. Rebuttal witness for defendant, issues of testing protocol and failure to use generally accepted methodology, reaction time, gunshot wound path, distance, and crime scene evidence. Deposition.

August 2014. N.G. AND L.G., Minors by and through their Guardian ad Litem Lilliana Magallon; Sara Perez, Plaintiffs v County of Los Angeles; Leroy Baca, David Chevez, Lawrence Swanson. U.S. District Court, Central District of California NO. CV13-0083127 SVW (FFMx). Atty Gary Casselman, 3415 S. Sepulveda Boulevard, Los Angeles, California 90034. Police fatal shooting of Jilberto Guterrez while handcuffed to a hospital bed, issues of trajectory and wound path, distance, location of shooter. Deposition.

June 2014. Rendon v City of Indio, CA. U.S. District Court, Central District, CA. Case # ED CV 13-0067 VAP (OPx). Attys David Kenner and Brett Greenfield, Kenner & Greenfield, 16663 Ventura Blvd, Encino, CA 91436. Police fatal shooting of Alejandro Rendon; trajectory, gunshot wounds, location of evidence, crime scene review, omissions of investigative procedures, subjective investigative techniques. Trial.

May 2014. Lucia Fancia/Estate of Nick Dominguez v Deputy Sheriff Johnny Barrientos, et al. U.S. District Court, New Mexico. Case # CIV 11-118 LH/LAM. Attys Mark Fine and David Fine, The Fine Law Firm, 220 Ninth St NW, Albuquerque, NM 87102. Police fatal shooting of Nick Dominguez; trajectory, sequence of shots, distance determination, discharged cartridge case ejection pattern variables, location of shooter.

May 2014. Rendon v City of Indio, CA. U.S. District Court, Central District, CA. Case # ED CV 13-0067 VAP (OPx). Attys David Kenner and Brett Greenfield, Kenner & Greenfield, 16663 Ventura Blvd, Encino, CA 91436. Police fatal shooting of Alejandro Rendon; trajectory, gunshot wounds, location of evidence, crime scene review, omissions of investigative procedures, subjective investigative techniques. Deposition.

April 2014. Arizona v Rosendo Sahagun. Maricopa County Superior # CR2011-157058-001. Atty Bruce Blumberg, Blumberg & Associates, 3600 N. 19 Ave, Phoenix, AZ. Sentencing hearing. Homicide, pled to reduced charge. Testimony at sentencing on gunshot distance, wound path trajectory, shooting reconstruction, firearms safety and lack of training.

March 2014. Victor Velasquez v City of Santa Clara, et al. Atty. M. Jeffery Kallis for Plaintiff, Law Firm of Kallis & Associates, 333 W San Carlos St., San Jose, CA 95110. U.S. District Court, Northern District, San Jose Division, San Jose, CA, # 11-CV-03588-PSG. Police non-fatal shooting, crime scene, trajectory, gunshot wounds, shooting reconstruction.

March 2014. Torres v Albuquerque Police Dept. 2nd Judicial Court, County of Bernalillo, NM. Atty. Cathy Love; McGinn, Carpenter, Montoya & Love, P.A., 201 Broadway Blvd, Albuquerque, NM 87102. Daubert Hearing and bench trial. Multiple Daubert motions denied, one allowed as being cumulative testimony already in evidence. Fatal police shooting, gunshot wounds, crime scene investigation, forensic methodology, holster retention level design, absence of evidence, which should be present.

January 2014. Pennsylvania v Lloyd Thomas. Office of the District Attorney of Susquehanna County, Montrose, PA.; District Attorney Jason Legg. Gunshot wounds, shooting reconstruction, trajectory. Double homicide.

January 2014. Kentucky v Pharo Wilson. *Trial*. Kenton Circuit Court, 4th Division, Case # 12-CR-0765; Atty. Daniel Schubert, Department of Public Advocacy, 333 Scott Street, Covington, Kentucky. Trajectory, gunshot wound, ricochet of projectiles determined to be a police friendly fire shooting.

January 2014. Kentucky v Pharo Wilson. *Daubert Hearing*. Kenton Circuit Court, 4th Division, Case # 12-CR-0765; Atty. Daniel Schubert, Department of Public Advocacy, 333 Scott Street, Covington, Kentucky. Trajectory, ricochet of projectiles, generally accepted methodology.

October 2013. Torres v City of Albuquerque, NM, U.S. District Court, District of New Mexico, # CIV 12-1048 RB/KBM. Atty. Tyler Atkins for Plaintiff; McGinn, Montoya and Love, P.A., 201 Broadway Blvd SE, Albuquerque, NM 87102. Police fatal shooting of Christopher Torres, wrongful death.

September 2013. Victor Velasquez v Santa Clara Police and City of Santa Clara, et al. U.S. District Court, Northern District, Oakland Division, Case # 11-CV-03588-PSG. Atty Jeffery Kallis, Kallis & Associates, San Jose, CA 95110. Police non-fatal shooting, crime scene, trajectory, gunshot wounds, shooting reconstruction. Deposition.

June 2013. Arizona v. Mario Enriquez, Pima County Superior Court, Case # CR-2011-1438. Attorney Stanton Bloom, 145 S 6th Ave, Tucson, AZ 85701. Microscopic comparisons, Theory of Identification, crime scene evidence.

April 2013. Carol Champommier and Eric Avery Feldman, individually and as Successors-in Interest to Zachary Champommier, deceased, PLAINTIFFS, v. United States of America, U.S. Drug Enforcement Administration DEA Agent Peter LoPresti; DEFENDANTS. United States District Court, Central District of California, Western Division. Case No. CV11-3913 JHN (PJWx). Attorney Cara L. Eisenberg, The Eisenberg Law Firm, 509 S. Beverly Drive, Beverly Hills, CA 90212. Fatal shooting by members of a Federal, County, and City Task Force; issues of distance, vehicle speed, reaction time to draw and fire, crime scene evidence, forensic examination, crime lab issues, trajectory, firearms safety, shooting at moving motor vehicle, location of evidence, shooting reconstruction, calculations of the free-fall of glass in relation to time, speed, and distance of motor vehicle, etc.

March 2013. Arizona v. Kerry J. Putnam. Maricopa County Criminal Superior Court, Case # CR2012-007390-001. Attorney Ronald Debrigida, DeBrigida Law Offices, PLLC., 20325 N. 51st Avenue, Suite 134, Glendale, AZ 85308. Impairment, firearms safety negligence, trajectory, gunshot wound, location of evidence. Homicide.